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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/804,152	03/19/2004	Kiril A. Pandelisev	PHOENIX	6403

7590 02/22/2006
James C. Wray
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1493 Chain Bridge Road
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EXAMINER

NGUYEN, THUKHANH T

ART UNIT	PAPER NUMBER
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1722

DATE MAILED: 02/22/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/804,152

Applicant(s)

PANDELISEV, KIRIL A.

Examiner

Thu Khanh T. Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 November 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 389-409 is/are pending in the application.
- 4a) Of the above claim(s) 409 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 389-408 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of group II in the reply filed on November 11, 2005 is acknowledged. Group I and group III have also been examined along with Group II. Group IV is withdrawn for non-elected invention.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 389-396, 399-401, 405 are rejected under 35 U.S.C. 102(b) as being anticipated by Alliegro et al (3,951,587).

Alliegro et al teach a method for forming tube, paddle and boat for semi-conductor wafer, comprising the step of:

- 1) selecting silicon carbide powder (col. 2, lines 67-68, claims 389, 393, 395, 399, 405),
- 2) presinter heating (col. 4, lines 4-6, claims 392, 404),
- 3) forming the wafer boat by cold-pressing, isostatic pressing, extrusion, or slip casting (col. 4, lines 22-25; claims 390, 394, 400), then cooling the material down in order to remove the boat from the mold (col. 2, lines 21-27); and
- 4) mixing the silicon carbide with other organic or inorganic compound (col. 5, lines 29-35; claims 391, 396, 401);

5) machining and cutting the wafer boat (col. 4, lines 8-11) and coating the wafer boat with silicon material (col. 3, lines 20-22; claims 406-407).

4. Claims 389, 392-393, 399-400, and 404-408 are rejected under 35 U.S.C. 102(b) as being anticipated by Sibley (5,776,391).

Sibley teaches a method for forming silicon carbide carrier, comprising the step of selecting silicon carbide material (col. 7, lines 3-5), purifying the mold with the inner gas in a purification reactor (col. 8, lines 30-32), depositing a plurality of silicon carbide layers in a mold (col. 7, lines 22-23), coating the silicon carbide boat by a CVD method (col. 7, lines 28-31), wherein the forming boat is cut longitudinally along the axes to form two boats (col. 7, lines 22-24), further finishing processes such as forming the slots or to reduce the boats to the desired dimension (col. 7, lines 51 to col. 8, lines 2).

5. Claims 389-396, 399-402, and 404-405 are rejected under 35 U.S.C. 102(b) as being anticipated by Nakayama et al (5,942,454).

Nakayama et al disclose a method for sintering silicon carbide wafer boats, comprising the steps of:

- a. selecting silicon carbide powder and mixing the silicon carbide powder with other organic or inorganic compounds (col. 3, lines 23-24),
- b. extruding the silicon material into a mold (col. 3, lines 24-25),
- c. vacuum sintering or purging or purifying the mold prior to sintering the wafer boat (col. 3, lines 38-41),

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- d. sintering the silicon carbide material at high temperature (col. 3, lines 41-43),
- e. coating the silicon carbide wafer boat by CVD process (col. 3, lines 56-58),

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 397-398, 402-403 are rejected under 35 U.S.C. 103(a) as being unpatentable over Alliegro et al ('587), Sibley ('391) or Nakayama et al ('454) as applied to claims 389-396, 399-401, and 405 above, and further in view of Moritoki et al (4,620,839).

Alliegro et al, Sibley and Nakayama et al disclose that the silicon carbide wafer boat was formed by a deposition, pressing, sintering, or isostatic pressing. However, these references fail to disclose that the silicon carbide material in a vacuum chamber or that the pressing is done by a gas pressure.

Moritoki et al disclose a method and apparatus for forming silicon carbide in a high temperature and high pressure isostatic molding chamber or HIP using an inert gas as a pressurizing medium (col. 28-32).

It would have been obvious to one of ordinary skill in the art at the time the applicant's invention was made to modify Alliegro et al, Sibley and Nakayama et al by improving the forming of the silicon carbide boats by providing an inert gas in a pressing chamber as a

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pressurizing medium as taught by Moritoki et al because the gas pressurizing medium would be more gentle on the forming material than other mechanical pressing means.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thu Khanh T. Nguyen whose telephone number is 571-272-1136.

The examiner can normally be reached on Monday- Friday, 6:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Duane Smith can be reached on 571-272-1166. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TN

DUANE SMITH
PRIMARY EXAMINER

D - A
2-21-06